

REMARKS

Claims 1 to 18 are now pending in the present application.

In view of the following, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

Applicants thank the Examiner for considering the previously filed Information Disclosure Statement, PTO-1449 paper and cited reference(s).

With respect to the objection to the Abstract for certain alleged informalities, the Abstract has been amended as suggested by the Examiner. Accordingly, entry and approval of the amendments to the Abstract, and withdrawal of this objection, is respectfully requested.

With respect to the objection to the Specification for the alleged informalities on page 1, line 21 and 23 to 24, page 4, lines 23 to 24, page 5, lines 26 to 27, and page 6, lines 23 to 24, the Specification has been amended as suggested by the Examiner. Accordingly, entry and approval of these amendments, and withdrawal of these objections, is respectfully requested.

With respect to the objection to the Specification for the alleged informalities on page 3, lines 26 to 27, and page 4, line 14, the Specification has been amended on page 3 to better clarify the term "top-ranked features". In particular, the page 3, lines 26 to 27 of the Specification now recite that "the exemplary feature selection method only computes the approximate gains for the feature(s) ranked during the current feature selection stage as having the largest gain (i.e. 'the top-ranked features') based on models obtained from previous feature selection stages. That is, the exemplary feature selection method only computes the approximate gains for those candidate features positioned to be within a top portion of an ordered list of the candidate features, the size of the top portion being determined dynamically, for example, at each feature selection stage." In this regard, the Examiner's attention is directed to page 12, line 24, to page 13, line 11, which state:

Unlike the exemplary pseudo code implementation of Figure 2 reflecting the IFS approach, the exemplary SGC feature selection method of Figure 3 does not evaluate all the features for the active model at every stage (one stage corresponds to the selection of a single feature). Initially, the feature candidates are ordered based on their gains computed via the uniform distribution. The feature with the largest gain is selected and forms the model for the next stage. In the next stage, the gain of the top feature in the ordered list is computed based on the model just formed in the previous stage. This gain is compared with the gains of the rest features in

the list. If this newly computed gain is still the largest, this feature is added to form the model at the next stage. If the gain is not the largest, it is inserted in the ordered list so that the order is maintained. In this case, the gain of the next top-ranked feature in the ordered list is re-computed using the model at the current stage.

This process may continue until the gain of the top-ranked feature computed under the current model is still the largest gain in the ordered list. Then, the model for the next stage is created with the addition of this newly selected feature. The entire feature selection process stops either when the number of the selected features reaches a pre-defined value in the input, or when the gains become too small to be useful to the model.

Hence, during each selection stage, the ordered list of features is rearranged such that the top-ranked feature may change, for example, multiple times during the current selection stage. Each time the top-ranked feature changes, the gain of the newly ranked feature is re-computed. Consequently, during each selection stage a different feature may be arranged at the top of the ordered list at any given time. Here, only those features ranked as having the largest gain each time the ordered list is rearranged (the so-called "top-ranked features") are selected for re-computing their gain, whereas the remaining features not selected for gain re-computation.

As further explained by the present application, the gains of the remaining features not selected need not be re-computed since their gains based on a previous model are re-used. This is because, as explained on page 11, line 24 to page 12, line 6, the gains for these lower ranked features may remain essentially unchanged. In particular, page 11, line 24 to page 12, line 6, states the following:

[W]hen a new feature is added to a model, the gains for the other features before the addition and after the addition may not change much. When there are changes, their actual amounts should essentially be within a narrow range across different features from top-ranked ones to the bottom-ranked ones. Therefore, the gains may only be required to be computed and compared from the top-ranked feature downward until we reach the feature whose corresponding gain, based on the new model, that is larger than the gains of the remaining features. With a few exceptions, the gains of the majority of the remaining features may be reused based on the previous models.

Accordingly, entry and approval of these amendments to the Specification, and withdrawal of these objections, is respectfully requested.

With respect to the objections to claims 1, 8, 14 and 18, the claims have been amended as suggested by the Examiner, and/or are believed to be self-explanatory. Accordingly, entry and approval of the amendments to claims 1, 8, 14 and 18, and withdrawal of the objections to these claims, are respectfully submitted.

Claims 1 to 18 were rejected under the first paragraph of 35 U.S.C. § 112, as allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention.

With respect to the rejections of claims 1, 5, 12, 15, 16 under the first paragraph of 35 U.S.C. § 112, the Examiner's attention is respectfully directed to pages 11 and 12, and to Applicants' comments above with respect to clarification of the term "top-ranked" features.

With respect to the rejections of claim 2 under the first paragraph of 35 U.S.C. § 112, the Examiner's attention is respectfully directed to page 11, lines 19 to 23.

With respect to the rejection of claims 6 and 9 under the first paragraph of 35 U.S.C. § 112, the Examiner's attention is respectfully directed to page 13, lines 12 to 17.

With respect to the rejections of claims 8, 14 and 18 under the first paragraph of 35 U.S.C. § 112, claims 8 and 14 have been amended as suggested by the Examiner, and are believed to be self-explanatory.

With respect to the rejections of claims 11, 13 and 17 under the first paragraph of 35 U.S.C. § 112, the Examiner's attention is respectfully directed to page 12, lines 3 to 4 of the Specification. In this regard, it is respectfully submitted that claim 11 does not state that the majority of the candidate features remaining are selected, as suggested on page 7 of the Office Action, but rather claim 11 states that "the gains of the candidate features remaining at each feature selection stage are *reused* ..." (emphasis added). That is, by *not* selecting the remaining candidate features for gain re-computation based on the new model, the gains computed using a previous model are reused.

As further regards the rejections of claims 1 to 18 under the first paragraph of 35 U.S.C. § 112, these rejections are not understood since the specification as originally filed recites these features verbatim in the claims as originally filed. Moreover, as explained above, the Specification provides explicit and detailed supporting description of the claimed subject matter. Hence, the Specification as originally filed provides an adequate written description so as to be enabling for the subject matter claimed. That is, the Specification as filed conveys

with reasonable clarity to those skilled in the art that, as of at least the filing date of the present application, the Applicant was in possession of the subject matter claimed, which is all that is required to satisfy the written description requirement under 35 U.S.C. § 112, first paragraph. Accordingly, the rejection is not understood and is plainly obviated by the foregoing.

It is therefore respectfully requested that the rejections be withdrawn in view of the foregoing.

Claims 1 to 18 were rejected under the second paragraph of 35 U.S.C. § 112, as allegedly being indefinite. Applicants respectfully submit that claims 1 to 18 as presented are definite for essentially the same reasons provided above in connection with Applicants' response to the claim objections and/or Applicants' response to the rejections of the claims under the first paragraph of 35 U.S.C. § 112. Accordingly, withdrawal of these indefiniteness rejections is respectfully requested.

Claims 1, 4 to 8, 10, 12, 14, 15, 17 and 18 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 6,304,841 ("Berger").

Claim 1 as presented relates to a method to select features for maximum entropy modeling, the method including determining gains for candidate features during an initialization stage and for only top-ranked features during each feature selection stage, ranking the candidate features in an ordered list based on the determined gains, selecting a top-ranked feature in the ordered list with a highest gain, and adjusting a model using the selected top-ranked feature.

It is respectfully submitted that Berger does not identically disclose (or even suggest) the feature of determining gains for candidate features for only top-ranked features during each feature selection stage, as provided for in the context of claim 1 as presented. Instead, Berger only refers to a feature selection algorithm, which computes the feature gains for all of the candidate features, selects the feature with the maximum gain, and then adjusts the model with the selected feature. (See steps 2 to 4 of Berger's feature selection algorithm explained in col. 17, lines 29 to 39). Accordingly, claim 1 as presented is not anticipated by the Berger reference.

Claims 2 to 6 and 11 ultimately depend from claim 1, and are therefore not anticipated by Berger for at least the same reasons as claim 1, as presented.

Claims 8, 12 and 18 as presented includes features essentially analogous to those of claim 1, and are therefore not anticipated by Berger for at least the same reasons as claim 1, as presented.

Claims 9 and 10 depend from claim 8, and are therefore not anticipated by Berger for at least the same reasons as claim 8, as presented.

Claims 13 to 17 depend from claim 12, and are therefore not anticipated by Berger for at least the same reasons as claim 12, as presented.

Withdrawal of the anticipations rejections is therefore respectfully requested.

In sum, claims 1 to 18 are allowable.

Conclusion

In view of the foregoing, it is respectfully submitted that all of the presently pending are allowable. It is therefore respectfully requested that the objections and rejections be withdrawn. All issues raised by the Examiner have been addressed, so that an early and favorable action on the merits is respectfully requested.

Dated: 12/22/2006

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